# Ash Meadows Gumplant
# *(Grindelia fraxino-pratensis)*

# Five-Year Review:
# Summary and Evaluation

*Photo by Gina Glenne May 2003*

**U.S. Fish and Wildlife Service**
**Nevada Fish and Wildlife Office**
**Nevada Fish and Wildlife Office**
**Las Vegas, Nevada**

**December 2007**

**FIVE-YEAR REVIEW**
**Species reviewed:** Ash Meadows gumplant (*Grindelia fraxino-pratensis*)

## TABLE OF CONTENTS

**FIVE-YEAR REVIEW**
**Ash Meadows gumplant (*Grindelia fraxino-pratensis*)**

## I. GENERAL INFORMATION

### I.A. Reviewers

**Lead Regional or Headquarters Office – Contact name(s) and phone numbers:**
Region 8 (California and Nevada) – Diane Elam, Deputy Division Chief for Listing, Recovery, and Habitat Conservation Planning (916) 414-6464

**Lead Field Office – Contact name(s) and phone numbers:**
Nevada Fish and Wildlife Las Vegas Office – Fred Edwards (702) 515-5230

**Cooperating Field Office(s) – Contact name(s) and phone numbers:**
Ventura Fish and Wildlife Office – Connie Rutherford (805) 664-1766

### I.B. Methodology used to complete the review

This five-year review includes an analysis of life history, research, and survey data available in the Nevada Fish and Wildlife Las Vegas Office, and Ash Meadows National Wildlife Refuge (Refuge) files, and other data available in general scientific literature. Most of the information for this review was taken from a U.S. Fish and Wildlife Service (Service) 2001 draft Proposed Rule to Delist Four Species and Remove Critical Habitat from Ash Meadows, which included the Ash Meadows gumplant. Staff in the Nevada Fish and Wildlife Las Vegas Office conducted this review.

### I.C. Background

#### I.C.1. FR Notice citation announcing initiation of this review:

On July 7, 2005, the Service announced initiation of the 5-year review for *Grindelia fraxino-pratensis* and asked for information from the public regarding the species' status (70 FR 39327). A second notice announcing the 5-year review and extending the request for information until January 3, 2006, was published on November 3, 2005 (70 FR 66842). No information was received from either solicitation.

#### I.C.2. Listing history

Original Listing
FR notice: 50 FR 20777
Date listed: May 20, 1985
Entity listed: *Grindelia fraxino-pratensis* (species)
Classification: Threatened

**I.C.3. Associated rulemakings**

Critical habitat was designated at the time of original listing on May 20, 1985 (50 FR 20777).

**I.C.4. Review History**

The status of the Ash Meadows gumplant has not been reviewed since the species was listed in 1985.

**I.C.5. Species' Recovery Priority Number at start of review**

14 (based on a 1-18 priority ranking system where 1 is the highest recovery priority and 18 is the lowest recovery priority); as reported in the Service 2006 annual recovery data call.

**I.C.6. Recovery Plan or Outline**

Name of plan: Recovery Plan for the Endangered and Threatened Species of Ash Meadows, Nevada
Date issued: September 28, 1990
Dates of previous revisions: N/A

## II. REVIEW ANALYSIS

### II.A. Application of the 1996 Distinct Population Segment (DPS) policy

**II.A.1. Is the species under review listed as a DPS?**

No. The Endangered Species Act (Act) of 1973, as amended, defines species as including any subspecies of fish or wildlife or plants and any distinct population segment of any species of vertebrate wildlife. This definition limits listing as a DPS to only vertebrate species of fish and wildlife. Because the species under review is a plant and the DPS policy is not applicable, the application of the DPS to the species listing is not addressed further in this review.

### II.B. Recovery Criteria

**II.B.1. Does the species have a final, approved recovery plan containing objective, measurable criteria?**

__X__ ***Yes***
_____ ***No***

**II.B.2. Adequacy of recovery criteria.**

**II.B.2.a. Do the recovery criteria reflect the best available and most up-to-date information on the biology of the species and its habitat?**

____ ***Yes***
__X__ ***No***

The Recovery Plan is 16 years old. The Recovery Plan combines recovery criteria for all seven listed plant species. It is ecosystem-based; therefore, delineating specific recovery objectives for each plant species is difficult. The Recovery Plan relies on future surveys, monitoring, and research to determine and set appropriate recovery objectives and delisting criteria for each species. Very little of this information has been collected; therefore, the Recovery Plan continues to remain conceptual regarding delisting criteria that were intended to be based on these data.

**II.B.2.b. Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria (and is there no new information to consider regarding existing or new threats)?**

____ ***Yes***
__X__ ***No***

**II.B.3. List the recovery criteria as they appear in the recovery plan, and discuss how each criterion has or has not been met, citing information. For threats-related recovery criteria, please note which of the 5 listing factors are addressed by that criterion. If any of the 5-listing factors are not relevant to this species, please note that here.**

See discussion in II.B.2.a. The Ash Meadows Recovery Plan is ecosystem-based and is not specific to the five listing factors. There are delisting criteria that apply to the seven listed plant species. These are generalized and require species specific inventory and monitoring to establish a baseline and to determine if the delisting criteria have been met for a five year period. Table 1 includes the delisting criteria that apply to Ash Meadows gumplant as described in the Ash Meadows Recovery Plan.

Delisting criterion #2 has only partially been achieved. The establishment of the Refuge in 1983 has secured and protected essential habitat. However, because natural vegetation corridors were largely destroyed prior to establishment of the Refuge, this action has not directly contributed attaining this recovery criterion. Restoration efforts are needed before the corridors as described in the Recovery Plan can be maintained. Only recently has effort been directed towards restoring the 4,460 acres of abandoned agricultural fields which now are barriers to gene flow and the dispersal of listed plant species within essential habitat. In the past five years, three restoration projects have been completed. It is not clear these projects have benefited the Ash Meadows gumplant because no monitoring of Ash Meadows gumplant was completed. Therefore, we conclude this criterion has only been partially achieved.

Table 1: Ash Meadows Recovery Plan delisting criteria for seven listed Ash Meadows plant species including the Ash Meadows gumplant.

| # | *Criterion* |
|---|---|
| 2 | Secure, protect, and maintain the species in natural vegetation corridors and adjacent buffer areas for gene flow and dispersal of listed plant species within essential habitat. |
| 3 | Native plant communities and aquatic communities have been reestablished to historic structure and composition within all essential habitat. |
| 6a | All of the listed plant species and the four candidate plant species are present in all the sites that they have historically occupied as identified in Appendix A, Table XV and within each critical habitat unit. |
| 6b | The listed plant has a frequency value equal to or greater than the frequency value determined by comparison with unaltered reference sites (task number 644) as an indicator of a self sustaining plant populations. |

Delisting criterion #3 has been only minimally implemented. Some natural recovery has taken place and one restoration effort has taken place to return disturbed habitat to a historic condition. Given the thousands of acres of abandoned agricultural fields and disturbance on the Refuge, the three small-scale restoration efforts that total less than 100 acres do not significantly improve the overall situation; therefore, we conclude this criterion has not been achieved.

Delisting criterion #6 has not been completed. The first part of this criterion is to maintain the species throughout its historic range. The species is not present in all the historic sites referenced in the Recovery Plan. Part (b) of this criterion is to achieve frequency values comparable to those in unaltered sites (Task number 644). These data are then to be used to develop quantifiable recovery objectives. Data collection for task 644 has not been completed and used to develop quantifiable recovery objectives for listed plant species; therefore, we conclude this criterion has not been achieved.

## II.C. Updated Information and Current Species Status

### II.C.1. Biology and Habitat

The Ash Meadows gumplant is a plant endemic to the Ash Meadows area in Nye County, Nevada, and Inyo County, California. It was not described by Reveal and Beatly until 1971, although it had been collected as early as 1965 by Beatly (Reveal and Beatly 1971). It is an erect biennial or more commonly a perennial herb of the Asteraceae (sunflower family), reaching 25 to 40 inches in height and has yellow flowers with heads measuring 0.3 to 0.4 inches in diameter (Mozingo and Williams 1980). The gumplant genus is so named be cause of their very sticky

(gummy) flower heads. Each Ash Meadows gumplant flower head can produce approximately 30 small seeds, and each branching individual can support several to up to a hundred flower heads. Therefore, in a good year, each plant may produce several hundred seeds (Lane 1993). Dispersal of the small seed is most likely accomplished by strong winds because they could be blown for some distance. Those seeds which fall within close proximity of the parent plant could be further transported by water during the winter rainy season or during summer flash floods. Mammals and birds may also be responsible for dispersal of seeds (Cochrane 1981).

**Distribution**

The Ash Meadows gumplant is endemic to the Ash Meadows Area in Nye County, Nevada, and Inyo County, California. The Ash Meadows gumplant is concentrated in three main populations and several smaller ones over an area of approximately 2,260 acres (BLM and Service 2000) (Figure 1). Most of its distribution is within the Ash Meadows National Wildlife Refuge (Refuge). One population occurs outside the Refuge boundary in the Carson Slough, primarily within the Ash Meadows Area of Critical Environmental Concern (ACEC) managed by Bureau of Land Management (BLM) in Nevada. This population extends into Inyo County, California, approximately 1 mile past the California/Nevada State line on BLM lands. The distribution shown in Figure 1 was developed from site survey reports completed in 1998. In 1998, the species was confirmed at most of the sites it occupied at the time of listing in 1985; however, a few sites were not surveyed because they occur on private lands. Six new sites within the known range of the species were documented during the 1998 surveys (Glenne 1998; Alexander 1998). These data were used to inform a 2000 EA to withdraw mineral claims on BLM lands within the Refuge (see Figure 1). No new surveys or mapping have been completed since 1998.

Based on anecdotal observations and assessments of biologists, it appears Ash Meadows gumplant distribution has likely increased since the species was listed (Service 2001). The amount of potential available habitat probably has increased as former agricultural fields have been restored by the Refuge and natural recovery has taken place. However, to date, no follow-up monitoring has been conducted to verify these observations.

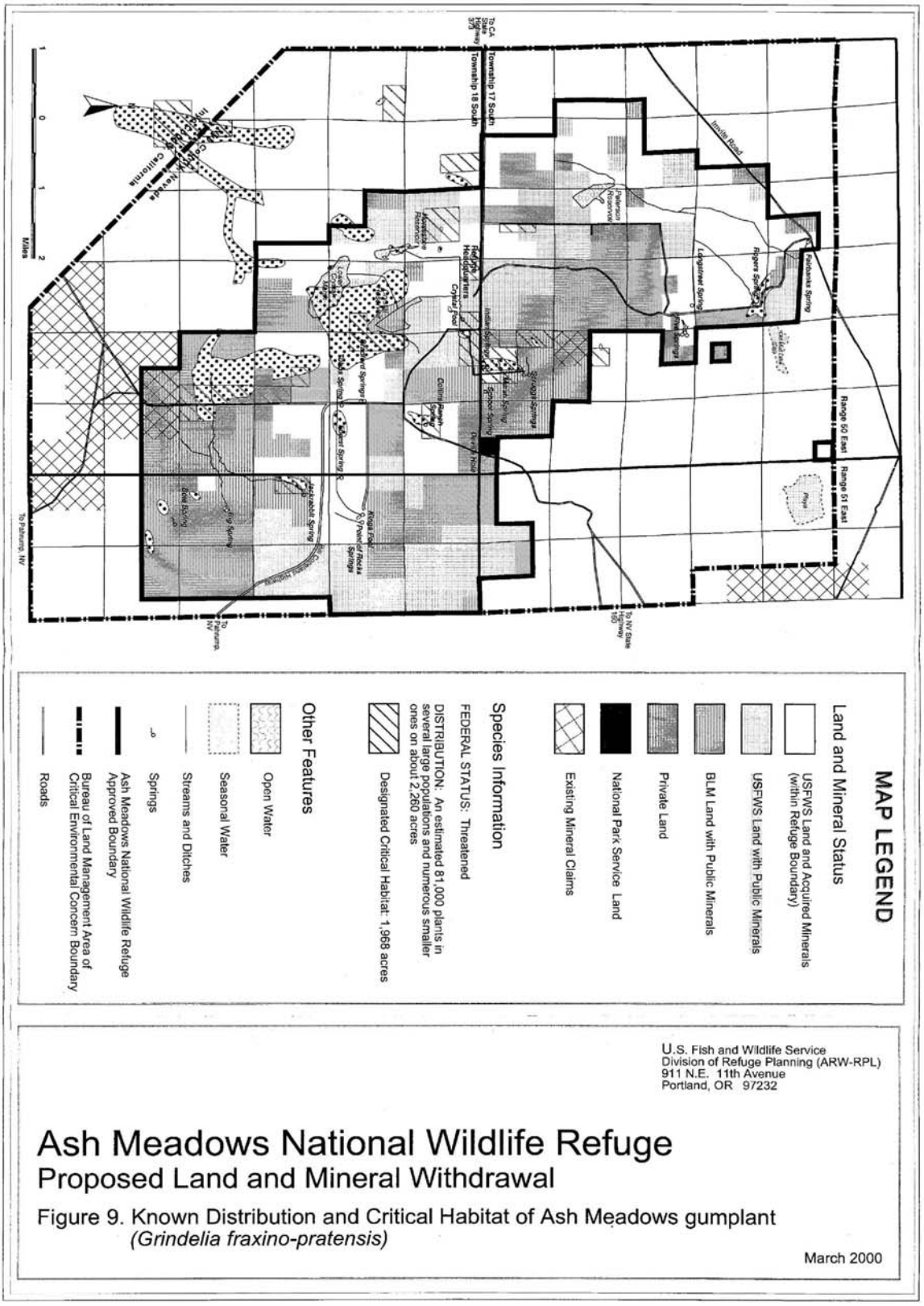


Figure 1. Distribution of Ash Meadows Gumplant from 2000 Environmental Assessment of Proposed Land and Mineral Withdrawal at the Ash Meadows National Wildlife Refuge, Nye County Nevada, NV (BLM and Service 2000). Dotted area, missing from the figure legend, indicates Ash Meadows gumplant distribution.

**Abundance**
There is little quantitative population or demographic data to describe trends for the Ash Meadows gumplant. The 2000 Environmental Assessment to withdraw lands from mineral entry estimated the entire Ash Meadows gumplant population to contain 81,000 plants within 2,260 acres (BLM and Service 2000). This number, based on visual estimates, is a serious underestimate of the total number of plants because a 2002 survey of the California population, which used transects to develop a population estimate, estimated 241,514 ± 69,660 plants within 88 acres (Soil Ecology and Restoration Group 2004). Other than the Inyo County, California, population, no quantitative population estimates have been made.

**Habitat**
The Ash Meadows area is a distinct ecosystem that supports hundreds of plant and animal species, including the Ash Meadows gumplant, that are closely associated with the wetlands and aquatic habitats that are unique features of this area. Over 30 percent of the Refuge has been mapped as wet meadow and is dependent on flows from several dozen springs and seeps (Otis Bay 2006). These springs and seeps are fed by an extensive groundwater system that extends more than 100 miles northeast of Ash Meadows and terminates at local discharge points including Alkali Flat, the Refuge, and Furnace Creek in Death Valley. The regional groundwater flow system that supports the Refuge and Ash Meadows gumplant habitat is depicted in Figure 2.

Ash Meadows gumplant is found primarily in saltgrass meadows along streams and surrounding pools in the vicinity of ash-screwbean mesquite woodlands and desert shadscale scrub vegetation. It occasionally occurs sparsely on open alkali clay soils in drier shadscale habitats or in the unique clay barrens which support other Ash Meadows endemics (Cochrane 1981). The wet meadow ecosystem occupied by Ash Meadows gumplant is typically dominated by saltgrass (*Distichlis spicata*). Common associates in the saltgrass meadow include the spring-loving centaury (*Centaurium namophilum*), Emory baccharis (*Baccharis emoryi*), yerba mansa (*Anemopsis californica*), western niterwort (*Nitrophila occidentalis*) and California loosestrife (*Lythrum californicum*). Common associates of sites occupied along streamsides and pools include velvet ash (*Fraxinus velutina*) and screwbean mesquite (*Prosopis pubescens*). Common associates within shadscale scrub include shadscale (*Atriplex confertifolia*), alkali sacatone (*Sporobolus airoides*), desert isocoma (*Isocoma acradenius*), alkali rabbitbrush, (*Chrysothamnus albidus*) and seablight (*Saueda* spp.) (Cochrane 1981).

**Genetics**
No genetic studies have been completed for this species.

**Taxonomy**
The nomenclature or taxonomy of Ash Meadows gumplant has not been changed since the species was listed.

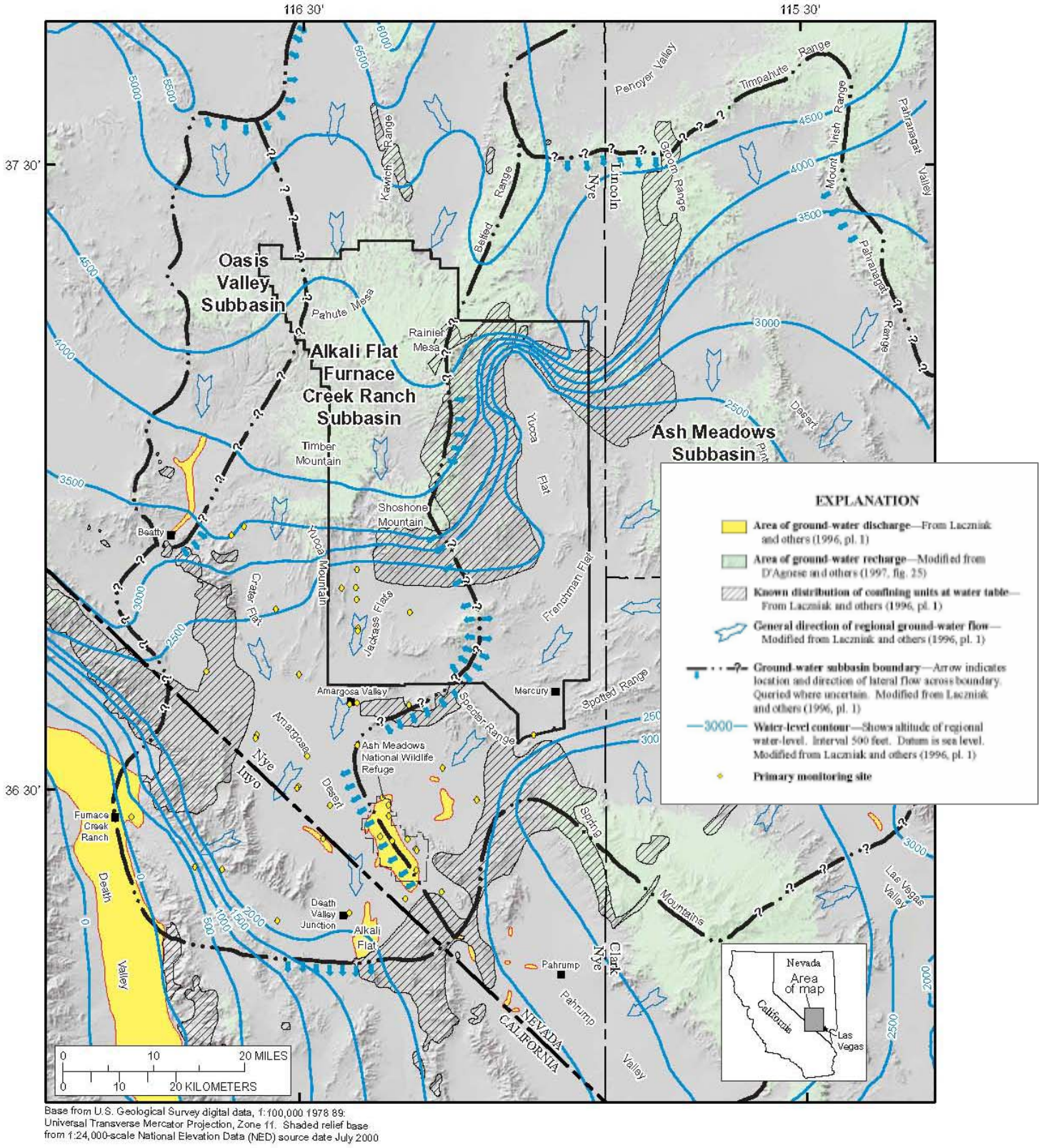


Figure 2. Major Factors Controlling Groundwater Flow in the Yucca Mountain Region, Southern Nevada and Eastern California. From USGS (2002) Report on Trend Analysis of GroundWater Levels and Spring Discharge in the Yucca Mountain Region Nevada and California, 1960-2000.

## II.C.2. Five-Factor Analysis (threats, conservation measures, and regulatory mechanisms)

### II.C.2.a. Present or threatened destruction, modification or curtailment of its habitat or range

The Ash Meadows gumplant faces three major threats under listing Factor A. Two of these threats are ecosystem-based alterations, habitat loss by changes in groundwater availability, and loss of habitat from invasive species. A third threat is direct and indirect disturbance as a result of surface mining.

Loss of habitat from groundwater pumping

The 1985 final rule for the Ash Meadows species, (50 FR 20777) describes interruption of water supply to habitat as a threat. Groundwater availability is a regional phenomenon; thus groundwater pumping in the vicinity would impact the entire Ash Meadows ecosystem, including habitat that supports the Ash Meadows gumplant. Groundwater pumping ceased on the Refuge in 1985 with the purchase of land and water rights; however, groundwater is currently being pumped from the adjacent Alkali Flat/ Furnace Creek hydrologic subbasin in Amargosa Valley at roughly two times the rate predicted to be sustainable (USGS 2005).

Devils Hole is the highest point in the Ash Meadows aquifer; therefore, changes that could impact the Ash Meadows gumplant would first appear at this site. Since 1988, levels in Devils Hole have steadily declined (NPS 2004). Between 1988 and 2004, the level in Devils Hole dropped 2.76 inches (NPS 2004). Because of its importance to the endangered Devils Hole pupfish (*Cyprinodon diabolis*), the aquifer on the Refuge is carefully monitored. Spring water discharge rates on the Refuge have not significantly changed. At this time it is reasonable to conclude the Ash Meadows gumplant has not been significantly affected by regional groundwater pumping.

Groundwater rights in Nevada are regulated by the State Engineer. In theory, the water rights owned by the Refuge are protected. However, in recent hearings, the National Park Service testified the number of water rights issued by the State of Nevada for the Amargosa Valley has grossly exceeded sustainable withdrawal levels and the resource is over-allocated (Baldino 2006a). It is important that current groundwater monitoring continues to ensure regional extractions do not affect the species.

Invasive non-native species

Approximately 42 percent of all threatened and endangered species in the U.S. are at risk because of non-native species (Pimental et al. 2005). Over 100 non-native species, approximately 16 percent of the total flora, occur on the Refuge (Service 2006). Many of these species are noxious agricultural weeds, such as Russian knapweed (*Acroptilon repens*), five hook bassia (*Bassia hyssopifolia*), Malta star thistle (*Centaurea melitensis*), yellow star thistle (*Centaurea solstitialis*), and hoary cress (*Cardaria draba*) (Service

2006). Non-native species directly compete with rare species for water, nutrients, and sunlight. Non-native species can also indirectly affect rare species by altering ecosystem processes such as nutrient cycling and fire regimes. As in the case of noxious agricultural weeds present on the Refuge, many invasive species have adaptations that allow them to outcompete native vegetation and colonize previously undisturbed habitat.

The rule to list the Ash Meadows gumplant identified invasive non-native species as a threat (50 FR 20777). The wet meadows that support Ash Meadows gumplant provide an especially favorable environment for invasive species that would not otherwise be able to survive in the desert. On the Refuge, there are an estimated 4,460 acres of former agricultural fields previously used for crop production and livestock grazing (Service, 2006). These fields, situated adjacent to two of the largest Ash Meadows gumplant populations, are now largely monocultures of Russian knapweed, bassia and Malta star thistle. In many parts of the Refuge, these non-native species are expanding beyond the fields into surrounding Ash Meadows gumplant habitat (Service 2006).

Fire facilitated by non-native species is a new threat to Ash Meadows gumplant not identified in the original listing. Non-native species are known to alter fire regimes and are a threat to biodiversity (Brooks *et al*. 2004). In some areas of the Refuge, non-native salt cedar trees (*Tamarix* sp.) and red brome grass (*Bromus madritensis*) increase the ease with which fire spreads through riparian corridors and along the spring channels that comprise Ash Meadows gumplant habitat. In the past two years, three major fires (the Meadows Fire, Longstreet Fire, and Ash Fire) have burned 144 acres (roughly 6%) of Ash Meadows gumplant habitat. Where there are weeds, anecdotal observations suggest fire appears to provide an opportunity for non-native plants to expand on the Refuge. Following the Meadows Fire, Russian knapweed populations exploded to create monocultures that now likely prevent regrowth and colonization of native vegetation, including the Ash Meadows gumplant (Baldino 2006a). In the short term, we would expect the Ash Meadows gumplant to recover from a single fire. However, in other ecosystems where non-native weeds have increased fire frequencies, a reduction in native plant cover and diversity has resulted (Brooks *et al*. 2004). We also expect this to be true in Ash Meadows gumplant habitat.

The Refuge is beginning to address the removal of non-native plants in two ways. First, the Refuge recently completed an Integrated Pest Management (IPM) Plan (Service 2006). The IPM Plan is the Refuge's long term approach for eradicating and managing a suite of invasive species on the Refuge. This plan includes mapping and monitoring, and incorporates restoration planning and best management practices. In addition to the IPM Plan, the recently completed Geomorphic and Biological Assessment for the Refuge (Otis Bay 2006) describes targets for hydrologic and biologic functioning, and provides a framework to manage and address invasive species on the Refuge.

Second, the Refuge has received funds through the Southern Nevada Public Land Management Act specifically for salt cedar eradication over the next three years. Last year, the Refuge was successful in receiving funding from the Southern Nevada Public Land Management Act for mapping and removing salt cedar. The Refuge is using part of

this funding to map the extent of other priority weed species, including Russian knapweed, bassia, and Malta star thistle. While significant, this is only a portion of the money needed to implement an effective weed control program and will not address the threat posed by weeds present in the thousands of acres of abandoned agricultural fields adjacent to Ash Meadows gumplant habitat. Currently, there is no long-term funding to implement the IPM and invasive species removal. Additional funding is needed before this threat to the Ash Meadows gumplant can be considered abated.

Invasive species will continue to be a threat for the foreseeable future and will require ongoing management and monitoring. Ash Meadows gumplant habitat is extremely vulnerable to being altered by non-native species. If left untreated the consequences would likely be decreases in the population of Ash Meadows gumplant, both due to competitive exclusion, and additional population reductions resulting from increased fire frequencies. Therefore, we conclude the magnitude of the threat posed by invasive non-native species is high. The scope of the weed problem on the Refuge is only just starting to be understood. Mapping efforts to be completed over the next few years will allow for better understanding.

Surface mining

In the 1985 final listing (50 FR 20777), BLM identified zeolite and potassium mining claims in the Ash Meadows vicinity as a potential threat to Ash Meadows species. Active mineral claims within Ash Meadows could cause direct loss of habitat, as well as indirect impacts to the species by diverting or draining water away from habitat during mining activities. There are 29 active mining claims on BLM lands in and near the Refuge and critical habitat for the species (BLM 2007). These claims are generally adjacent to a large population and critical habitat in the southwestern corner of the Refuge. Approximately 55 percent of the Ash Meadow gumplant distribution is closed to public minerals through either Refuge ownership of surface mineral rights or by a temporary closure of public minerals while BLM prepares a petition/application to withdraw minerals for a 20 year period. Approximately 45 percent of the occupied Ash Meadows gumplant habitat within the Refuge boundary is on BLM and Service lands with a high mineral potential and are open to public minerals (BLM and Service 2000). Mineral entry on Federal lands is authorized by the Mining Laws of 1872. The BLM administers the Mining Law Administration program. Under this program, surface disturbance and impacts to the Ash Meadows gumplant are permissible as long as operations comply with all pertinent Federal and State laws, including National Environmental Policy Act, section 7 of the Act and State of Nevada prohibitions on take.

In March 2000 the Service submitted a petition/application to the BLM to withdraw 9,459.66 acres of public lands within the Refuge boundary and transfer jurisdiction over the surface estate to the Service. BLM has not processed this petition/application, but there is currently renewed interest in reinitiating this petition/application. Withdrawal of mineral entry will offer protection from surface mining. Currently the economics of surface mining on lands occupied by the Ash Meadows gumplant within the Refuge boundary are unknown. It is also unknown what percentage would actually be suitable

for surface mining. Since the Refuge was established, no mineral claims have been made on public lands within the Refuge. Given the percentage of Ash Meadows gumplant currently protected and plans to withdraw BLM and Service lands with public minerals we conclude that this threat is of low magnitude and is non-imminent.

Conservation measures undertaken

Two important conservation measures were undertaken to protect the land and water rights on the Refuge. First, in 1962, the U.S. Geological Survey (USGS) began studying Devils Hole and the regional aquifer. As a result of this monitoring, groundwater pumping was demonstrated to have an effect on the water level of Devils Hole, and all the springs in the Ash Meadows vicinity were found to be hydrologically connected. This information supported a 1976 U.S. Supreme Court decision (United States vs. Cappaert *et al*.) which established a minimum water level that must be maintained in Devils Hole to protect the Devils Hole pupfish. This ruling now protects the water rights that support the entire Ash Meadows ecosystem. The USGS, National Park Service (NPS), and Service continue to monitor groundwater levels in Devils Hole and the Refuge. In the early 1990s, USGS installed groundwater monitoring wells on the Refuge. Since then, USGS and Refuge staff have also monitored water discharge rates at eight springs on the Refuge. Outside the Refuge, USGS has been monitoring groundwater levels and pumping rates since the 1960s (USGS 2002). These groundwater monitoring efforts continue today.

The other important conservation measure was initiated shortly after the proposal to list the Ash Meadows gumplant and other Ash Meadows endemic species was published in 1983 (48 FR 43098). At that time, development of 11,173 acres of land and surface water rights in the Ash Meadows area by a private developer posed an imminent threat. Existing groundwater pumping and plans to expand it were also an imminent threat to the Ash Meadows ecosystem. These lands were purchased by The Nature Conservancy and sold to the Service to establish the Refuge in June 1984. With establishment of the Refuge, the immediacy and magnitude of many threats to the Ash Meadows ecosystem were significantly reduced. However, this ecosystem and the Ash Meadows gumplant are still seriously threatened by competition from non-native invasive plants.

### II.C.2.b. Over-utilization for commercial, recreational, scientific, or educational purposes

Over-utilization was not considered a threat to this species at the time of listing, and is not considered a threat now.

### II.C.2.c. Disease or predation

Disease and predation were not considered threats to this species at the time of listing, and are not considered threats now.

### II.C.2.d. Inadequacy of existing regulatory mechanisms

The proposed and final listing rules did not describe the inadequacy of existing regulatory mechanisms as a significant threat to the Ash Meadows gumplant.

**State protections**
The Ash Meadows gumplant was added to the Nevada Division of Forestry list of critically endangered plants under Nevada Revised Statute 527.270 in 1982. The species is not listed by the State of California. However, it is on the California Native Plant Society's "List 1B"; this designation indicates the species qualifies for state listing, and must be considered during review of proposed projects under the California Environmental Quality Act (CEQA) (Tibor 2001). CEQA (chapter 2, section 21050 *et seq.* of the California Public Resources Code) requires government agencies to consider and disclose environmental impacts of projects and to avoid or mitigate them where possible. Under CEQA, public agencies must prepare environmental documents to disclose environmental impacts of a project and to identify conservation measures and project alternatives. Through this process, the public can review proposed project plans and influence the process through public comment. However, CEQA does not guarantee that such conservation measures will be implemented.

**Federal protections**
Federal laws and regulations, including National Environmental Policy Act, Clean Water Act and those governing mining discussed above, apply on Federal lands.

Presently, inadequacy of regulatory mechanisms does not pose a significant threat to the species largely because distribution of the species is almost entirely on Federal lands within the Refuge and on adjacent BLM lands within the Ash Meadows ACEC. The mission of the Refuge is to protect, manage and recover listed species within its boundaries. If the Ash Meadows gumplant is delisted in the future, populations on and off the Refuge would be at higher risk of surface mining and groundwater extraction (discussed under Factor A above). Once these threats are resolved protection under the Act would no longer be needed to ensure compliance with existing regulatory mechanisms.

### II.C.2.e. Other natural or manmade factors affecting its continued existence:

At the time of listing, trampling by cattle and wild horses along with off-highway vehicle (OHV) activity were considered threats (50 FR 20777). After establishment of the Refuge in 1984, cattle were removed. Wild horse and OHV activity were stopped or limited by construction of roughly 16 miles of fencing on the perimeter of the Refuge in 1995. However, illegal OHV activity has recently become a problem again on the Refuge, possibly due to a fence in need of repair (Baldino 2006b). Repairs to the fence and monitoring of OHV activity will be an ongoing necessity at the Refuge. Recently, the Refuge added a law enforcement officer to patrol the Refuge, which should assist with this issue. Because of the positive management practices on the Refuge, we

conclude that grazing and trampling by cattle and wild horses and illegal OHV activity are no longer significant threats to the Ash Meadows gumplant.

Small populations have an inherent risk of extinction due to stochastic and natural catastrophic events. Fire and flooding are natural catastrophic events that occur within Ash Meadows gumplant range. Given the species' distribution on the Refuge, fire is the catastrophic event most likely to affect the Ash Meadows gumplant. Although possible, it is unlikely that any one fire could affect a major portion of the Ash Meadow gumplant distribution throughout its entire range. Based on recent experience with wildfires on the Refuge, we believe the Ash Meadows gumplant has the ability to survive individual fire events; therefore, we consider the threat posed by a single fire to be low and non-imminent. However, because increased fuel loads from non-native species can lead to more frequent fires in the Mojave Desert (Brooks and Pyke 2001), we do consider increased fire frequencies to be a threat to the species (see discussion under Factor A).

### II.C.2.f. Summary of threat factors

Summarized in Table 2 are the current threats facing the Ash Meadows gumplant as described in sections II.C.2.a-e.

Table 2. Summary of Current Threats by Listing Factor.

| **Listing Factor** | **Threat** | **Magnitude and Imminence** |
|---|---|---|
| *Factor A* | Loss of habitat and curtailment of range by loss of groundwater | Low, Non-imminent |
| | Loss of habitat and curtailment of range by invasive plants | High, Imminence unknown |
| | Destruction of habitat by surface mining | Low, Non-imminent |
| *Factor B* | Not a Threat | Does not apply |
| *Factor C* | Not a Threat | Does not apply |
| *Factor D* | Not a Threat | No Longer a Threat |
| *Factor E* | Grazing and Trampling | No Longer a Threat |
| | OHV | No Longer a Threat |
| | Stochastic Events | Low, Non-imminent |

## II.D. Synthesis

The Act defines a "threatened species" is defined as any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Many threats to the Ash Meadows gumplant discussed in the original listing, including groundwater extraction on the Refuge, grazing and trampling by cattle and wild horses, and OHV activity, have largely been addressed through landscape-level conservation measures. These measures include the designation of Ash Meadows as a National Wildlife Refuge, by the purchase of land and water rights for the Refuge, and through BLM activities on the Ash Meadows ACEC, such as fencing and wild horse removal.

Two threats under listing Factor A, surface mining and invasive non-native species, continue to be the most important obstacles to long-term protection and delisting. Prior to a change in status, both threats to the Ash Meadows gumplant must be managed. In this evaluation we determine that the threat posed by invasive non-native species is high and non-imminent; the threat posed by surface mining is low and non-imminent. A third threat under Factor A, the loss of habitat due to groundwater pumping, has not abated but is currently being monitored and legal protection for the Devils Hole pupfish appears sufficient to protect the Ash Meadows gumplant.

Mineral extraction is a threat identified at the time of listing. The importance of securing the Refuge and adjacent BLM lands from this threat is reflected in Recovery Plan tasks 2-4 and 4-44, which describe minimizing human disturbance. This threat continues today. Approximately 45 percent of the occupied Ash Meadows gumplant habitat is on BLM and Service Lands with a high mineral potential (BLM and Service 2000). A title transfer of BLM lands within the Refuge to the Service and a proposal to withdraw mineral claims within the Refuge and adjacent BLM lands have both not occurred. The threat posed by surface mining would be relatively straightforward to address and alleviate. This would be accomplished by completing the withdrawal of public mineral rights from BLM and Service lands and completing a transfer of BLM lands to the Service. There is currently renewed interest in pursuing a petition/application to withdraw public minerals on the Refuge.

The threat posed by invasive species is challenging to address. The need to manage non-native species is highlighted in Recovery Plan tasks 2-2-2 and 4-41. The Refuge is making significant first steps; however, tangible on-the-ground benefits to the Ash Meadows gumplant have not yet occurred. Non-native species pose a threat to Ash Meadows gumplant through competitive exclusion and by changing ecosystem processes, including fire regimes. Fire, facilitated or fueled by non-native species, is a new threat to the Ash Meadows gumplant not described in the 1985 listing. Within the past two years, three fires facilitated by non-native species have burned within Ash Meadows gumplant habitat. Non native species previously confined to abandoned agricultural fields now appear to be moving out into Ash Meadows gumplant habitat. It is our conclusion that the Ash Meadows gumplant, with a distribution of only 2,260 acres distributed over three major populations, could become endangered within its range due to invasive non-native species and the increased fuel loads they create if these threats are unmanaged. The Refuge is making significant strides in addressing the threat posed by non-native species, including the recent completion of the IPM Plan and securing short-term funding for salt cedar and other non-native species removal. These activities are just getting underway and long-term funding is necesssary to ensure progress can continue after initial efforts.

The location of six new sites in 1998 suggests the range of the species could be expanding within the Refuge. Anecdotal observations also suggest populations have increased largely due to natural recovery after groundwater pumping and disturbances (agriculture, wild horse grazing, and OHV activity) were discontinued on the Refuge. However, there are no data or information to quantify Ash Meadows gumplant population increases. The Recovery Plan describes three delisting criteria for the Ash Meadows gumplant. Since approval of the plan in 1990 only one of these criteria has been partially completed. As described in the criteria, Ash Meadows gumplant populations should be mapped and demographic population data collected. A firm

understanding of population demographics and population trends for the Ash Meadows gumplant is necessary before firm conclusions regarding recovery can be made.

Given the seriousness of the threat posed by invasive species and fire, lack of quantitative information to determine recovery, and the delisting criteria that remain incomplete, we conclude that removal of the Ash Meadows gumplant from threatened status is not warranted at this time.

## III. RESULTS

### III.A. Recommended Classification:

____ **Downlist to Threatened**
____ **Uplist to Endangered**
____ **Delist (*Indicate reasons for delisting per 50 CFR 424.11):***
____ *Extinction*
____ *Recovery*
____ *Original data for classification in error*
_X_ **No change is needed**

### III.B. New Recovery Priority Number: 14 (no change)

The Ash Meadows gumplant is currently assigned a listing priority number of 14. A ranking of 14 reflects a low degree of threat with a high potential for recovery. Under Service guidance, a species with a low degree of threat is rare or is facing a population decline which may be a short-term, self correcting fluctuation, or the impacts of threats of the species habitat are not fully known(48 FR 43098-43105, September 21, 1983).

Under Service guidelines, recovery potential is classified as either high or low. A high potential for recovery means the biological and ecological limiting factors are well understood, threats to the species' existence are well understood and easily alleviated, and intensive management is not needed. Based on the level of natural recovery observed on the Refuge to date and the life history of similar members of the Asteraceae, we do not believe the species requires intensive management beyond restoring habitat, maintaining fencing, and managing for non-native species on the Refuge. Recovery of the species will be facilitated by the IPM Plan that provides a management framework and process for managing non-native species on the Refuge, and by the Ash Meadows Geomorphic and Biological Assessment that provides a framework for future restoration activities. Due to these reasons and those detailed previously, we conclude the Ash Meadows gumplant is best described as having a high recovery potential.

## IV. RECOMMENDATIONS FOR FUTURE ACTIONS

The Recovery Plan is ecosystem-based and describes recovery actions that benefit the twelve listed Ash Meadows species. There are delisting criteria that apply to the seven

listed plant species. These are generalized and require species specific inventory and monitoring to establish a baseline and to determine if the criteria have been met for a five year period. Once these data are collected and the criteria are met, the Ash Meadows gumplant could be considered for delisting in the near future because many of the threats described at the time of listing have been removed; the remaining threats are being monitored, and plans have been initiated to eliminate or limit those threats. The following actions should be implemented over the next five years to enable the Service to consider the potential delisting of this species.

1. The population monitoring described in the Recovery Plan should be carried out.

2. The Refuge is implementing many restoration projects that could benefit the Ash Meadows gumplant. To document recovery of the Ash Meadows gumplant, these projects should include pre- and post-site sampling to verify and quantify that restoration actions are benefiting the species.

3. Non-native weeds are a major threat to the Ash Meadows gumplant, and the IPM Plan is an important step towards addressing this problem. Long-term funding should be secured for non-native species control on the Refuge.

4. Interactions between fire and non-native weeds within Ash Meadows gumplant habitat and effects on the Ash Meadows gumplant need to be studied.

5. Surface mining remains a threat to the Ash Meadows gumplant. Service and BLM lands with a high mineral potential must be withdrawn from future mineral entry. In addition, existing mining claims should be acquired when possible. Unless these mineral rights are purchased or transferred to the Service, a program needs to be put in place to renew existing mineral withdrawals every 20 years.

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**U.S. FISH AND WILDLIFE SERVICE**
**FIVE-YEAR REVIEW of Ash Meadows gumplant (*Grindelia fraxino-pratensis*)**

Current Classification Threatened
Recommendation resulting from the five-year Review

____ **Downlist to Threatened**
____ **Uplist to Endangered**
____ **Delist**
_X_ **No change is needed**

Appropriate Listing/Reclassification Priority Number, if applicable __N/A___

Review Conducted By Fred Edward, Nevada Fish+Wildlife Office

FIELD OFFICE APPROVAL:

Lead Field Supervisor, Fish and Wildlife Service

Approve _____ Date 12/31/07

REGIONAL OFFICE APPROVAL:

**Lead Regional Director, Fish and Wildlife Service**

Approve _____ Date 1/10/8